

29

AIR FORCE



HUMAN

RESOURCES

AD-A221 807

ADVANCED ON-THE-JOB TRAINING SYSTEM:
PRIME ITEM DEVELOPMENT SPECIFICATION FOR THE
TRAINING DEVELOPMENT AND DELIVERY SUBSYSTEM

Douglas Aircraft Company
A Division of McDonnell Douglas Corporation
2450 South Peoria
Aurora, Colorado 80014

TRAINING SYSTEMS DIVISION
Brooks Air Force Base, Texas 78235-5601

April 1990
Interim Technical Paper for Period August 1985 - December 1989

Approved for public release; distribution is unlimited.

LABORATORY

AIR FORCE SYSTEMS COMMAND
BROOKS AIR FORCE BASE, TEXAS 78235-5601

NOTICE

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely Government-related procurement, the United States Government incurs no responsibility or any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise in any manner construed, as licensing the holder, or any other person or corporation; or as conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

The Public Affairs Office has reviewed this paper, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This paper has been reviewed and is approved for publication.

HENDRICK W. RUCK, Technical Advisor
Training Systems Division

RODGER D. BALLENTINE, Colonel, USAF
Chief, Training Systems Division

This technical paper is printed as received and has not been edited by the AFHRL Technical Editing staff. The opinions expressed herein represent those of the author and not necessarily those of the United States Air Force.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
	April 1990	Interim - August 1985 to December 1989	
4. TITLE AND SUBTITLE Advanced On-the-job Training System: Prime Item Development Specification for the Training Development and Delivery Subsystem			5. FUNDING NUMBERS C - F33615-84-C-0059 PE - 63227F PR - 2557 TA - 00 WU - 02
6. AUTHOR(S)			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Douglas Aircraft Company A Division of McDonnell Douglas Corporation 2450 South Peoria Aurora, Colorado 80014			8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Training Systems Division Air Force Human Resources Laboratory Brooks Air Force Base, Texas 78235-5601			10. SPONSORING/MONITORING AGENCY REPORT NUMBER AFHRL-TP-89-88
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The Advanced On-the-job Training System (AOTS) Prime Item Development Specification for the Training Development and Delivery Subsystem establishes a description for the use of the Subsystem with AOTS. It was prepared using MIL-STD 4904A, Specification Practices, as a guide. The AOTS Training and Delivery Subsystem provides the support necessary to develop, store, and deliver training materials as necessary to support the job-site knowledge training and duty position qualification. The specification uses AOTS terminology to describe existing Government-owned Instructional Support System (ISS) software.			
14. SUBJECT TERMS advanced on-the-job training system prime item development specification training development and delivery software			15. NUMBER OF PAGES 68
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL

AFHRL Technical Paper 89-88

April 1990

ADVANCED ON-THE-JOB TRAINING SYSTEM:
PRIME ITEM DEVELOPMENT SPECIFICATION FOR THE
TRAINING DEVELOPMENT AND DELIVERY SUBSYSTEM

Douglas Aircraft Company
A Division of McDonnell Douglas Corporation
2450 South Peoria
Aurora, Colorado 80014

TRAINING SYSTEMS DIVISION
Brooks Air Force Base, Texas 78235-5601

Reviewed and submitted for publication by

Jack L. Blackhurst, Major, USAF
Chief, Advanced On-the-job Training System Program

This publication is primarily a working paper. It is published solely to document work performed.

SUMMARY

The Advanced On-the-job Training System (AOTS) was an Air Staff directed, AFHRL developed, prototype system which designed, developed, and tested a proof-of-concept prototype AOTS within the operational environment of selected work centers at Bergstrom AFB, Texas, and Ellington ANGB, Texas, from August 1985 through 31 July 1989. The AOTS Prime Item Development Specification for the Training Development and Delivery Subsystem establishes a description for the use of the Subsystem with AOTS. It was prepared using MIL-STD-4904A, Specification Practices, as a guide. The AOTS Training Development and Delivery Subsystem provides the support necessary to develop, store, and deliver training materials as necessary to support job-site knowledge training and duty position qualification. The specification uses AOTS terminology to describe existing Government-owned Instructional Support System (ISS) software.

Annotation For	
1.0	1.0
2.0	2.0
3.0	3.0
4.0	4.0
5.0	5.0
6.0	6.0
7.0	7.0
8.0	8.0
9.0	9.0
10.0	10.0
11.0	11.0
12.0	12.0
13.0	13.0
14.0	14.0
15.0	15.0
16.0	16.0
17.0	17.0
18.0	18.0
19.0	19.0
20.0	20.0
21.0	21.0
22.0	22.0
23.0	23.0
24.0	24.0
25.0	25.0
26.0	26.0
27.0	27.0
28.0	28.0
29.0	29.0
30.0	30.0
31.0	31.0
32.0	32.0
33.0	33.0
34.0	34.0
35.0	35.0
36.0	36.0
37.0	37.0
38.0	38.0
39.0	39.0
40.0	40.0
41.0	41.0
42.0	42.0
43.0	43.0
44.0	44.0
45.0	45.0
46.0	46.0
47.0	47.0
48.0	48.0
49.0	49.0
50.0	50.0
51.0	51.0
52.0	52.0
53.0	53.0
54.0	54.0
55.0	55.0
56.0	56.0
57.0	57.0
58.0	58.0
59.0	59.0
60.0	60.0
61.0	61.0
62.0	62.0
63.0	63.0
64.0	64.0
65.0	65.0
66.0	66.0
67.0	67.0
68.0	68.0
69.0	69.0
70.0	70.0
71.0	71.0
72.0	72.0
73.0	73.0
74.0	74.0
75.0	75.0
76.0	76.0
77.0	77.0
78.0	78.0
79.0	79.0
80.0	80.0
81.0	81.0
82.0	82.0
83.0	83.0
84.0	84.0
85.0	85.0
86.0	86.0
87.0	87.0
88.0	88.0
89.0	89.0
90.0	90.0
91.0	91.0
92.0	92.0
93.0	93.0
94.0	94.0
95.0	95.0
96.0	96.0
97.0	97.0
98.0	98.0
99.0	99.0
100.0	100.0



A-1

PREFACE

This paper documents the Advanced On-the-job Training System (AOTS) Prime Item Development Specification for the Training Development and Delivery Subsystem. This specification was prepared by Douglas Aircraft Company, the AOTS development contractor, under Government Contract Number F33615-84-C-0059. The AFHRL Work Unit number for the project is 2557-00-02. The primary office of responsibility for management of the work unit is the Air Force Human Resources Laboratory, Training Systems Division, and the Air Force AOTS manager is Major Jack Blackhurst.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1.0	SCOPE	1
1.1	General	1
2.0	APPLICABLE DOCUMENTS	2
2.1	Applicable Documents	2
2.2	Government Documents	2
3.0	REQUIREMENTS	4
3.1	Prime Item Definition	4
3.1.1	Prime Item Diagram	4
3.1.2	Interface Definition	4
3.1.2.1	Management Subsystem Interface	16
3.1.2.1.1	Management Subsystem	16
3.1.2.2	Evaluation Subsystem Interface	16
3.1.2.2.1	Evaluation Subsystem	17
3.1.2.3	Computer Support Subsystem Interface	17
3.1.2.3.1	Computer Support Subsystem	17
3.1.2.4	Personnel and Support Subsystem Interface	17
3.1.2.4.1	Personnel and Support Subsystem	18
3.1.2.5	Training Development and Delivery Components Interface	18
3.1.2.5.1	Training Development Component	18
3.1.2.5.2	Training Delivery Component	18
3.1.3	Major Component List	19
3.1.4	Government Furnished Property List	19
3.1.5	Government Loaned Property List	19
3.2	Characteristics	19
3.2.1	Performance	19
3.2.2	Physical Characteristics	19
3.2.3	Reliability	20
3.2.4	Maintainability	20
3.2.5	Environmental Conditions	20
3.2.6	Transportability	20
3.3	Design and Construction	20
3.3.1	Materials, Processes, and Parts	20
3.3.2	Electromagnetic Radiation	20
3.3.3	Nameplates and Product Markings	20
3.3.4	Workmanship	20
3.3.5	Interchangeability	21
3.3.6	Safety	21

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

TABLE OF CONTENTS, cont.

<u>Section</u>		<u>Page</u>
3.3.7	Human Performance/Human Engineering	21
3.4	Documentation	21
3.5	Logistics	21
3.5.1	Maintenance	21
3.5.2	Supply	21
3.5.3	Facilities and Facility Equipment	21
3.6	Personnel and Training	21
3.6.1	Personnel	21
3.6.2	Training	21
3.7	Major Component Characteristics	22
3.7.1	Training Development Component	22
3.7.2	Training Delivery Component	22
3.8	Precedence	22
4.0	QUALITY ASSURANCE PROVISIONS	23
4.1	General	23
4.1.1	Responsibility for Tests	23
4.2	Quality Conformance Inspections	23
5.0	PREPARATION FOR DELIVERY	26
5.1	General	26
5.2	Preservation and Packaging	26
5.3	Packing	26
5.4	Marking for Shipping	26

APPENDICES

<u>Appendix</u>		<u>Page</u>
10.0	APPENDIX I Data Flow Diagrams	27
10.1	Scope	27
10.2	Data Flow Diagram Symbols	29
10.3	AOTS Training Development & Delivery DFD Numbering	30
20.0	APPENDIX II Data Dictionaries	34
20.1	Scope	34
20.2	Training Development and Delivery Processes	35
20.2.1	Training Development and Delivery Data Flows	43

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

TABLES

<u>Table</u>		<u>Page</u>
I	Quality Conformance Inspection	24

FIGURES

<u>Figure</u>		<u>Page</u>
1	Functional Hierarchy of the Training Development and Delivery Subsystem	5

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

1. SCOPE

1.1 General. This specification establishes a description for the Training Development and Delivery Subsystem for use with the Advanced On-the-Job Training System (AOTS). It has been prepared using MIL-STD-490A, Specification Practices, as a guide. The Training Development and Delivery Subsystem provides the support necessary to develop, store, and deliver training materials as necessary to support job-site knowledge training and duty position qualification.

The Training Development and Delivery Subsystem documented in this specification uses AOTS terminology to describe existing government owned ISS software.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

2. APPLICABLE DOCUMENTS

2.1 Applicable Documents. The following documents, of the exact issue shown, form a part of this specification to the extent specified herein. In the event of conflict between documents referenced herein and the detailed contents of Sections 3 and 4, the detailed requirements of Sections 3 and 4, shall be considered as the superseding requirements.

2.2 Government Documents

AFR 30-17 Safeguarding Controlled Item (Test Material)
15 June 77 Information

MIL-STD-490A Specification Practices

DI-E-3102A Configuration Item Development Specification

70S647100 Prime Item Development Specification for the Management Subsystem

70S647201 Critical Item Development Specification for the Development Component of the Training Development and Delivery Subsystem

70S647202 Critical Item Development Specification for the
Delivery Component of the Training Development and
Delivery Subsystem

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

70S647300

Prime Item Development Specification for the
Evaluation Subsystem

70S647400

Prime Item Development Specification for the
Computer Support Subsystem

70S647500

Prime Item Development Specification for the
Personnel and Support Subsystem

Functional Description for the Instructional
Support System, February 1988

Final Data Base Design Document for the
Instructional Support System, 12 February 1988

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

3.0 REQUIREMENTS

3.1 Prime Item Definition. This specification establishes a description of the Training Development and Delivery Subsystem for use with the Air Force Advanced On-the-Job Training System (AOTS). The Training Development and Delivery Subsystem will provide a computer-based interactive instructional materials development process within which appropriate training materials can be written, evaluated, and revised. It shall also provide for computer presentation, storage, and distribution of training materials, and trainee data. The subsystem shall consist of the following major components:

- a. Training Development Component
- b. Training Delivery Component

For additional information concerning this software refer to the Functional Description for the Instructional Support System, February 1988.

3.1.1 Prime Item Diagram. A functional organization of the Training Development and Delivery Subsystem is presented in Figure 1. The figure shows the interface relationships among the major components of the subsystem.

3.1.2 Interface Definition. The Training Development and Delivery Subsystem has functional interfaces with all of the subsystem elements of the AOTS. The system level diagram presented in Section 10, Appendix I, DFD 5.0, identifies these functional interfaces. Appendix II defines terms used in the system level diagram.

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988

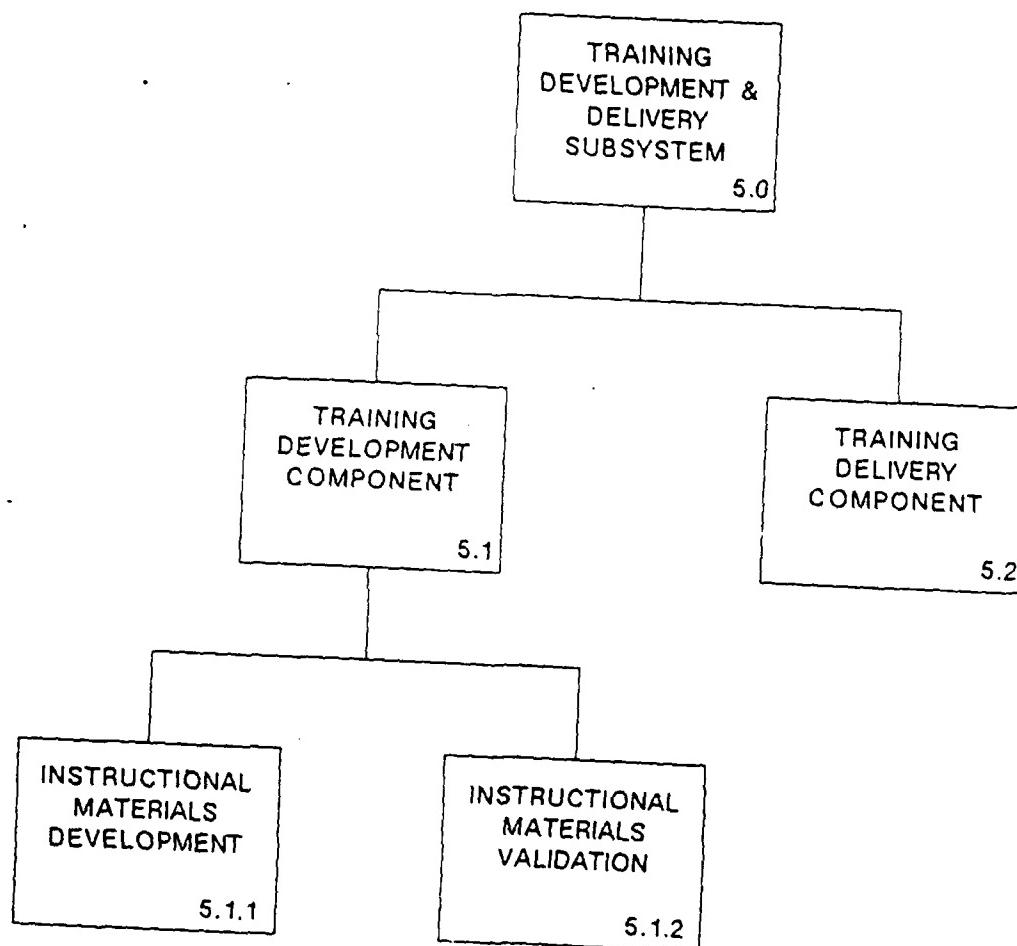


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(1 of 11)

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988

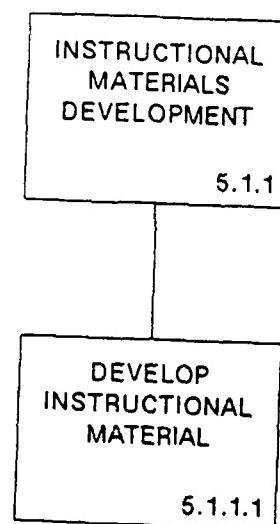


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(2 of 11)

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988

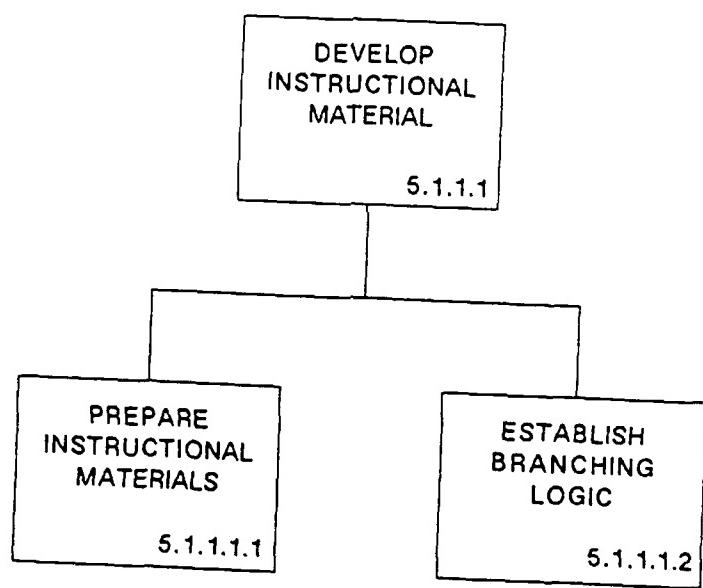


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(3 of 11)

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988

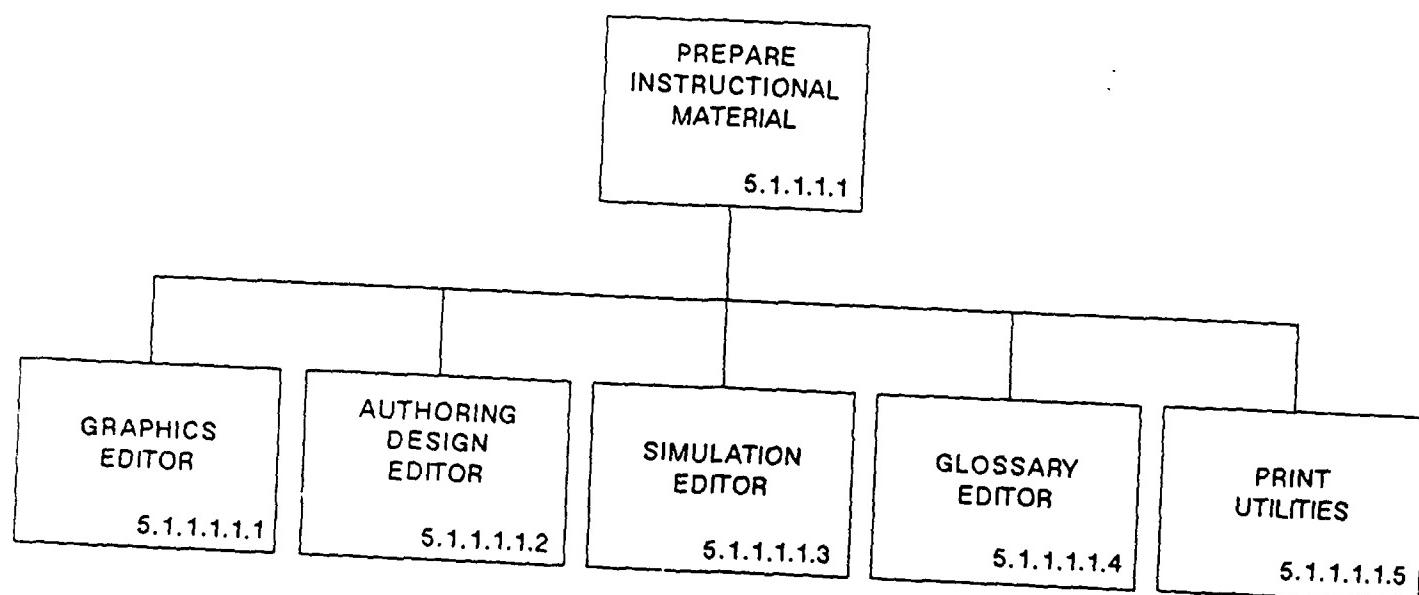


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(4 of 11)

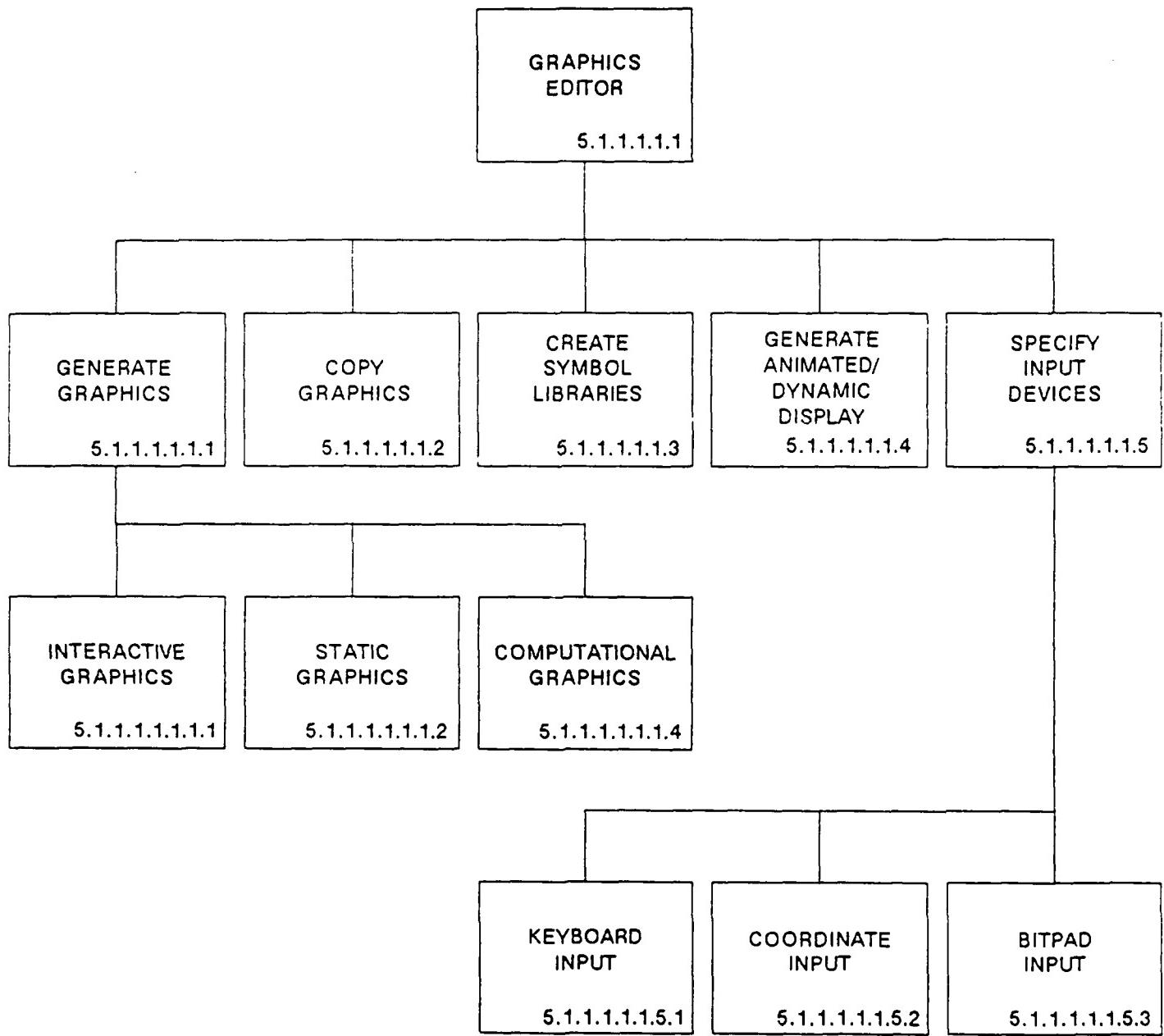


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(5 of 11)

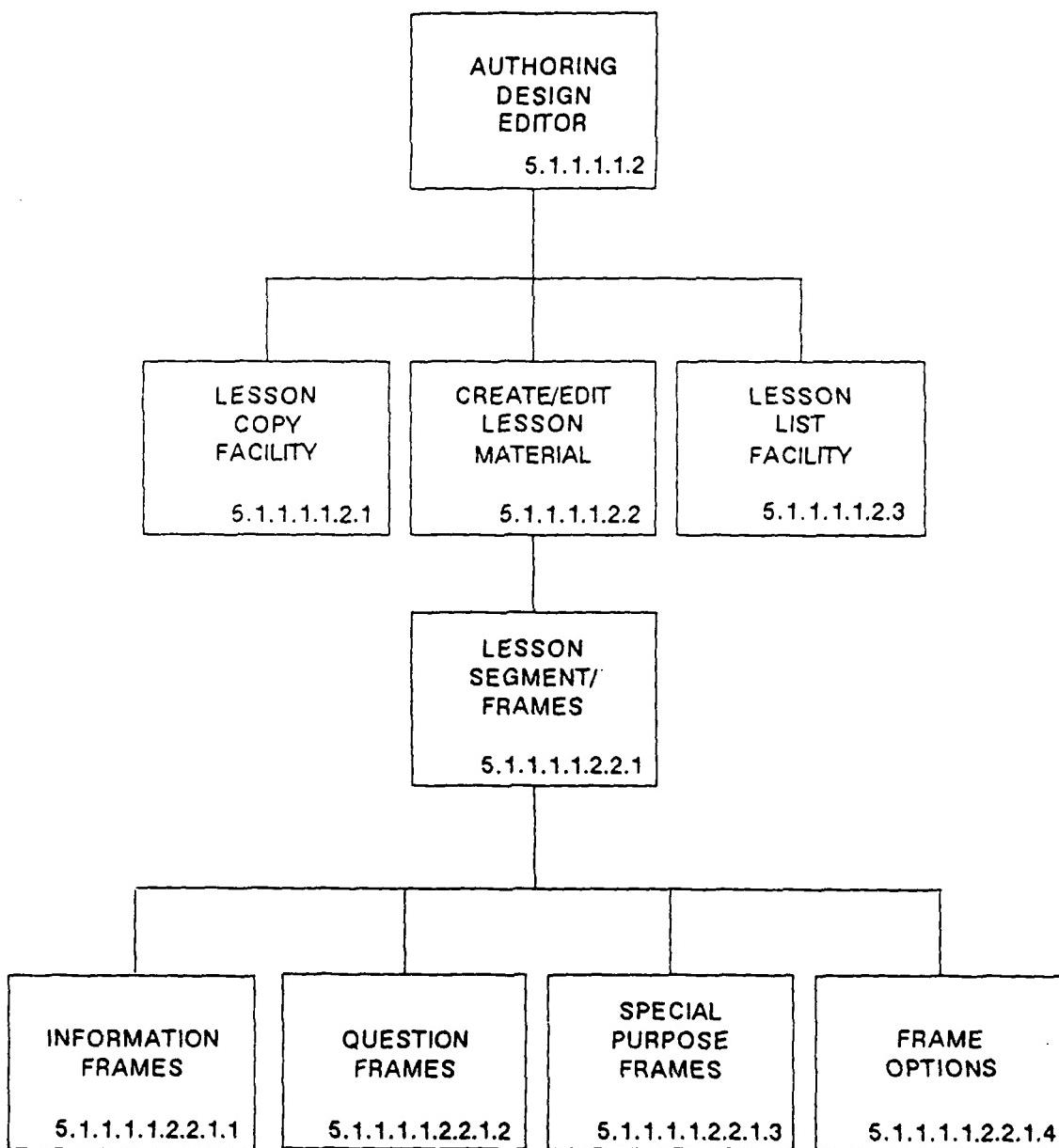


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(6 of 11)

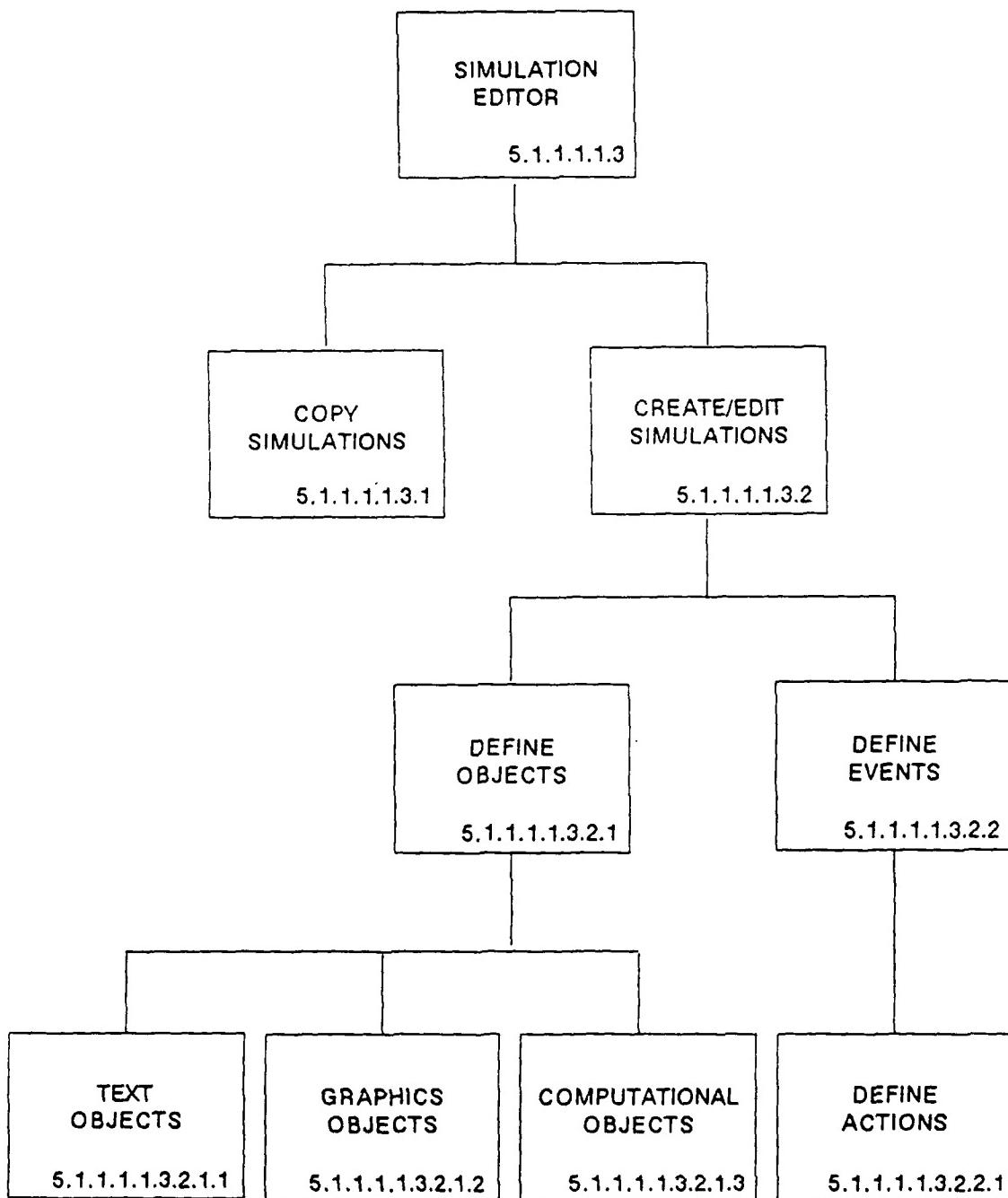


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(7 of 11)

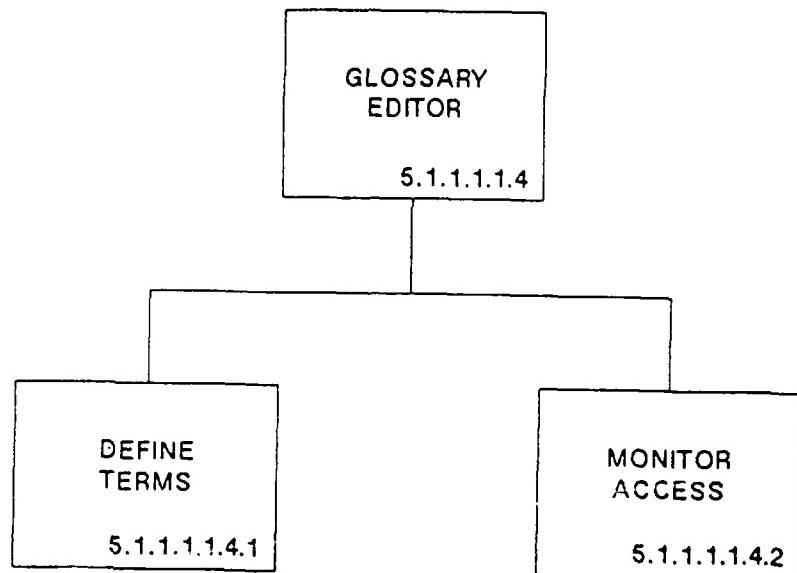


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(8 of 11)

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988

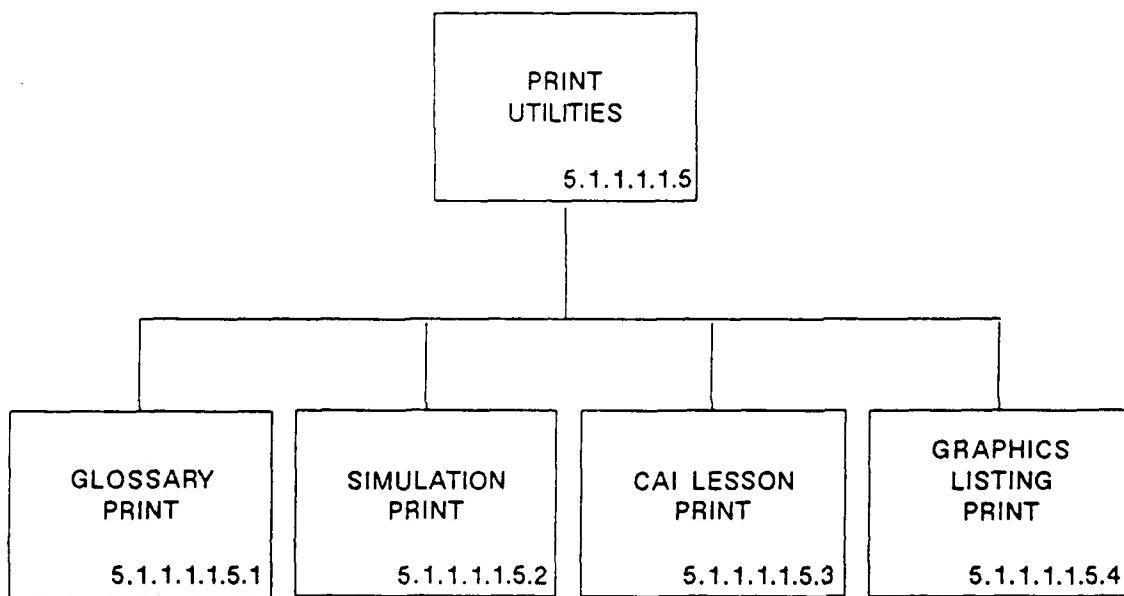
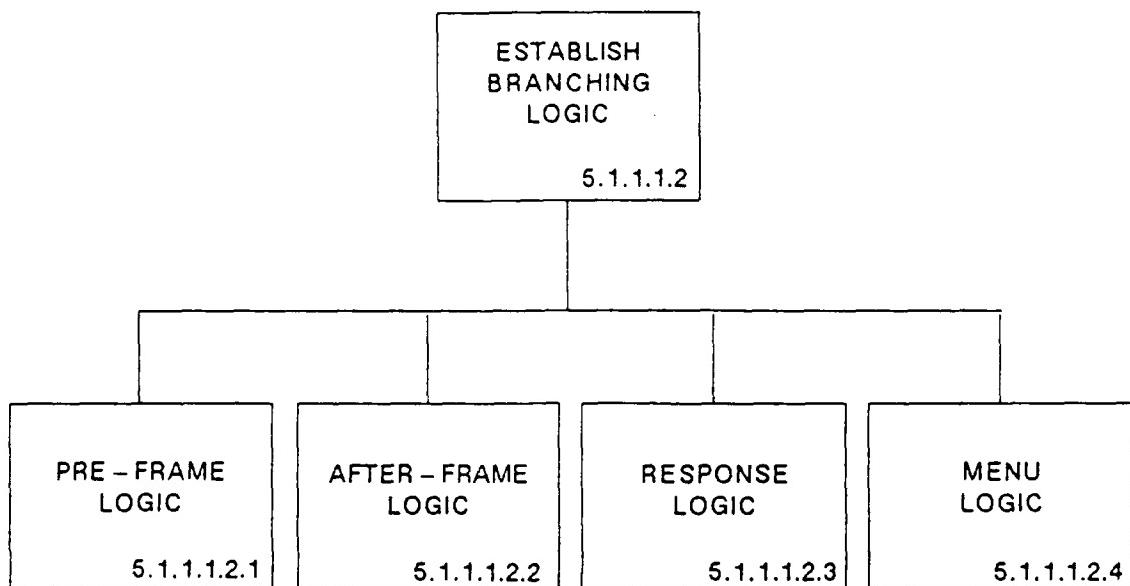


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(9 of 11)

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988



**Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING
DEVELOPMENT & DELIVERY SUBSYSTEM**
(10 of 11)

Specification Number 70S647200
Code Ident. No. 76301
Date 1 April 1988

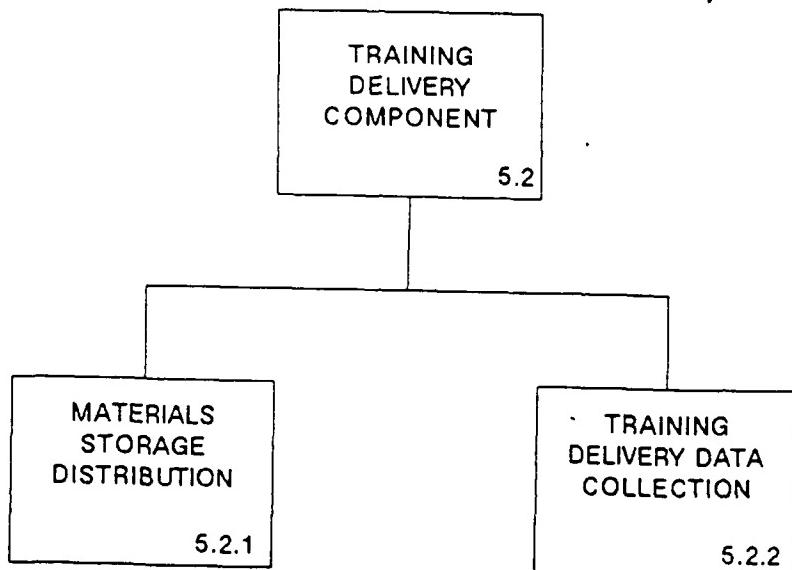


Figure 1 FUNCTIONAL HIERARCHY OF THE TRAINING DEVELOPMENT & DELIVERY SUBSYSTEM
(11 of 11)

3.1.2.1 Management Subsystem Interface. The tasks to be performed by the Training Development and Delivery Subsystem will include, but will not be limited to, the following:

- a. Assist in the identification of training resources required for job site task training
- b. Assist in development of behavioral objectives and test items
- c. Present instructional materials online
- d. Assist in collecting trainee performance data
- e. Provide trainee instructional materials completion data

3.1.2.1.1 The Management Subsystem. The Management Subsystem shall provide the following capabilities in support of the Training Development and Delivery Subsystem:

- a. Training materials development requirements
- b. AFS task data
- c. Individual trainee instructional assignments
- d. Access control

3.1.2.2 Evaluation Subsystem Interface. The tasks to be performed by the Training Development and Delivery Subsystem will include, but will not be limited to, the following:

- a. Assist in collection of data to evaluate system effectiveness
- b. Graphics data as required

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

3.1.2.2.1 The Evaluation Subsystem. The Evaluation Subsystem shall provide the following capabilities in support of the Training Development and Delivery Subsystem:

- a. Behavioral objectives
- b. Assist in data collection to evaluate system effectiveness
- c. Post knowledge training evaluations

3.1.2.3 Computer Support Subsystem Interface. The tasks to be performed by the Training Development and Delivery Subsystem will include, but will not necessarily be limited to, the following:

- a. Functional requirements to support the accomplishment of Training Development objectives
- b. Functional requirements to support the accomplishment of Training Delivery objectives

3.1.2.3.1 The Computer Support Subsystem. The Computer Support Subsystem shall provide the following in support of the Training Development and Delivery Subsystem:

- a. Commercially available language compilers
- b. Debugging and authoring aids
- c. Ada
- d. Terminal and printer support
- e. Software programs and editors required to accomplish specified objectives

3.1.2.4 Personnel and Support Subsystem Interface. The Training Development and Delivery Subsystem will assist in the design and development of on-line training courses.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

- 3.1.2.4.1 The Personnel and Support Subsystem. The Personnel and Support Subsystem shall provide the personnel necessary to perform tasks required by the Training Development and Delivery Subsystem

3.1.2.5 Training Development and Delivery Components Interface.

Within the Training Development Component, instructional and evaluational materials are developed. These materials are forwarded to the Training Delivery Component which handles their distribution to trainees. The Training Delivery Component returns Processed Training and Delivery Data, which describes:

- a. Trainee performance on each CAI segment
- b. Trainee performance on each text and question frame as well as the entire module
- c. Trainee comments about these frames

3.1.2.5.1 Training Development Component. In support of the Training Delivery Component, the Training Development Component provides for:

- a. Instructional materials development
- b. Instructional materials validation

3.1.2.5.2 Training Delivery Component. In support of the Training Development Component, the Training Delivery Component provides for:

- a. Training materials storage and distribution
- b. Training delivery data collection

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

- 3.1.3 Major Component List. The Training Development and Delivery Subsystem consists of the following components:
 - a. Training Development Component
 - b. Training Delivery Component

- 3.1.4 Government Furnished Property List. ISS will be furnished by the Government.

- 3.1.5 Government Loaned Property List. This section is not applicable to this specification.

3.2 Characteristics

- 3.2.1 Performance. The Training Development and Delivery Subsystem will provide the mechanisms to produce instructional materials that support job-site training. The training materials development environment will be supportive of requirements imposed by AFM 50-2 and AFR 30-17. Training materials developed will be stored and delivered in support of trainee position qualification. Data reflecting training completion will be generated as training events occur.

- 3.2.2 Physical Characteristics. This section is not applicable to this specification.

3.2.3 Reliability. Reliability of the Training Development and Delivery Subsystem shall be the responsibility of the U.S. Air Force.

3.2.4 Maintainability. Maintainability of the Training Development and Delivery Subsystem shall be the responsibility of the U.S. Air Force.

3.2.5 Environmental Conditions. This section is not applicable to this specification.

3.2.6 Transportability. This section is not applicable to this specification.

3.3 Design and Construction.

3.3.1 Materials, Processes, and Parts. This section is not applicable to this specification.

3.3.2 Electromagnetic Radiation. This section is not applicable to this specification.

3.3.3 Nameplates and Product Markings. This section is not applicable to this specification.

3.3.4 Workmanship. This section is not applicable to this specification.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

3.3.5 Interchangeability. This section is not applicable to this specification.

3.3.6 Safety. This section is not applicable to this specification.

3.3.7 Human Performance/Human Engineering. This section is not applicable to this specification.

3.4 Documentation. This section is not applicable to this specification.

3.5 Logistics.

3.5.1 Maintenance. This section is not applicable to this specification.

3.5.2 Supply. This section is not applicable to this specification.

3.5.3 Facilities and Facility Equipment. Design, construction, and modification of real property facilities will be accomplished by the government.

3.6 Personnel and Training.

3.6.1 Personnel. This section is not applicable to this specification.

3.6.2 Training. This section is not applicable to this specification.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

3.7 Major Component Characteristics. The Training Development and Delivery Subsystem will be capable of providing for the development and delivery of training materials. The system will collect data related to the delivery of job-site-training.

3.7.1 Training Development Component. The Training Development Component will provide valid and reliable methodologies and mechanisms for producing and maintaining the instructional materials necessary to support job-site task training in the AOTS work centers. Subcomponents required to accomplish the objectives of the Training Development Component include:

- a. Instructional Materials Development
- b. Instructional Materials Validation

The detailed component characteristics and criteria are defined in the Critical Item Specification 70S647201.

3.7.2 Training Delivery Component. The Training Delivery Component will provide valid and reliable methodologies and mechanisms for storage and delivery of training materials to support job-site-training. Subcomponents required to accomplish the objectives of the Training Delivery Component include:

- a. Materials Storage and Distribution
- b. Training Delivery Data Collection

The detailed component characteristics and criteria are defined in the Critical Item Specification 70S647202.

3.8 Precedence. This section is not applicable to this specification

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

4.0 QUALITY ASSURANCE PROVISIONS

4.1 General. This section is not applicable to this specification.

4.1.1 Responsibility for Tests. This section is not applicable to this specification.

4.2 Quality Conformance Inspections. This section is not applicable to this specification.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

TABLE I QUALITY CONFORMANCE INSPECTIONS

<u>PARAGRAPH</u>	<u>N/A</u>	<u>INSPECTION</u>	<u>ANALYSIS</u>	<u>TEST</u>	<u>DEMONSTRATION</u>
3	x				
3.1	x				
3.1.1	x				
3.1.2	x				
3.1.2.1	x				
3.1.2.1.1	x				
3.1.2.2	x				
3.1.2.2.1	x				
3.1.2.3	x				
3.1.2.3.1	x				
3.1.2.4	x				
3.1.2.4.1	x				
3.1.2.5	x				
3.1.2.5.1	x				
3.1.2.5.2	x				
3.1.3	x				
3.1.4	x				
3.1.5	x				
3.2	x				
3.2.1	x				
3.2.2	x				
3.2.3	x				
3.2.4	x				
3.2.5	x				
3.2.6	x				
3.3	x				
3.3.1	x				
3.3.2	x				
3.3.3	x				
3.3.4	x				
3.3.5	x				
3.3.6	x				
3.3.7	x				

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

TABLE I QUALITY CONFORMANCE INSPECTIONS cont.

<u>PARAGRAPH</u>	<u>N/A</u>	<u>INSPECTION</u>	<u>ANALYSIS</u>	<u>TEST</u>	<u>DEMONSTRATION</u>
3.4	x				
3.5	x				
3.5.1	x				
3.5.2	x				
3.5.3	x				
3.6	x				
3.6.1	x				
3.6.2	x				
3.7	x				
3.8	x				

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

5.0 PREPARATION FOR DELIVERY

5.1 General. This section is not applicable to this specification.

5.2. Preservation and Packaging. This section is not applicable to this specification. Preservation and packaging shall be in accordance with FED-STD-102 and MIL-P-116H. Special packaging design, when applicable, shall be developed, using MIL-P-9024 for overland carrier.

5.3. Packing. This section is not applicable to this specification.

5.4. Marking for Shipping. This section is not applicable to this specification.

SECTION 10, APPENDIX I

10.0. DATA FLOW DIAGRAMS

1C Scope. This appendix establishes a description and the interface requirements for the Training Development and Delivery Subsystem. A structured system analysis approach has been employed, using data flow diagrams (DFDs) to illustrate the design.

NOTE:

- 1) Square, an external entity symbol. A source and/or destination of data outside the subsystem, component, or subcomponent being described. Numbered references of the external entity are contained in the top left corner of the square. Each defined external entity is shown in 10.3. Entities external to AOTS are numbered according to the convention established in the Management Subsystem Specification, 70S5647100.
- 2) Arrow, data flow symbol. A pathway along which data moves into, around, and out of the subsystem or component. Each data flow is labeled. Definitions for data flows are organized alphabetically in Appendix II.
- 3) Rounded rectangle, a process symbol. A function of the subsystem or component which logically "transforms" data. The processes are labeled numerically, beginning with "1," on each data flow diagram. The numbering system follows a logical decimal scheme to trace from

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

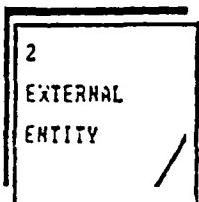
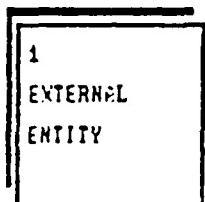
one process to another. Definitions and descriptions for processes are organized numerically in Appendix II.

- 4) Open-ended rectangle, a data store symbol. A place in the subsystem or component where data is stored in some way. The numbering scheme for identifying the data stores is shown in 10.3. Definitions and contents of data stores are given in numerical order in Appendix II.

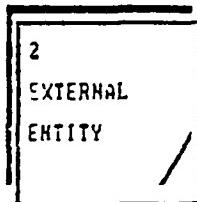
Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

10.2 DATA FLOW DIAGRAM SYMBOLS

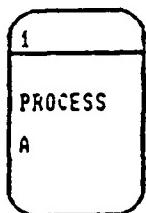
A. EXTERNAL ENTITIES



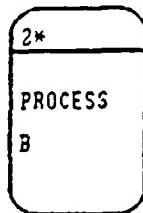
AN EXTERNAL ENTITY BOX WITH A
DIAGONAL LINE IN THE LOWER RIGHT
CORNER OF THE BOX MEANS THAT THE
BOX APPEARS AGAIN IN ANOTHER
PART OF THE SAME DFD.



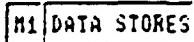
B. PROCESSES



AN ASTERISK TO THE RIGHT OF
THE PROCESS NUMBER SHOWS THAT
THE PROCESS IS EITHER TOTALLY
OR PARTLY MANUAL. FOR A
DESCRIPTION OF THE PROCESS
REFER TO APPENDIX II.



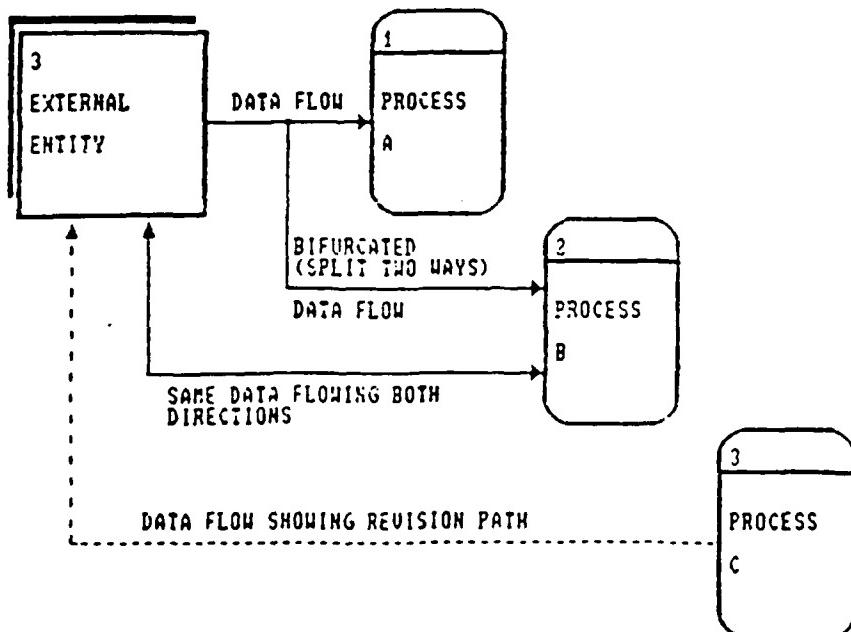
C. DATA STORES



A DATA STORE WITH A TRIANGLE
AT THE LEFT END MEANS THAT
THE DATA STORE APPEARS
AGAIN IN ANOTHER PART OF THE SAME DFD.



D. DATA FLOWS



Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

10.3 Training Development & Delivery Component DFD Numbering.

a. Data Store

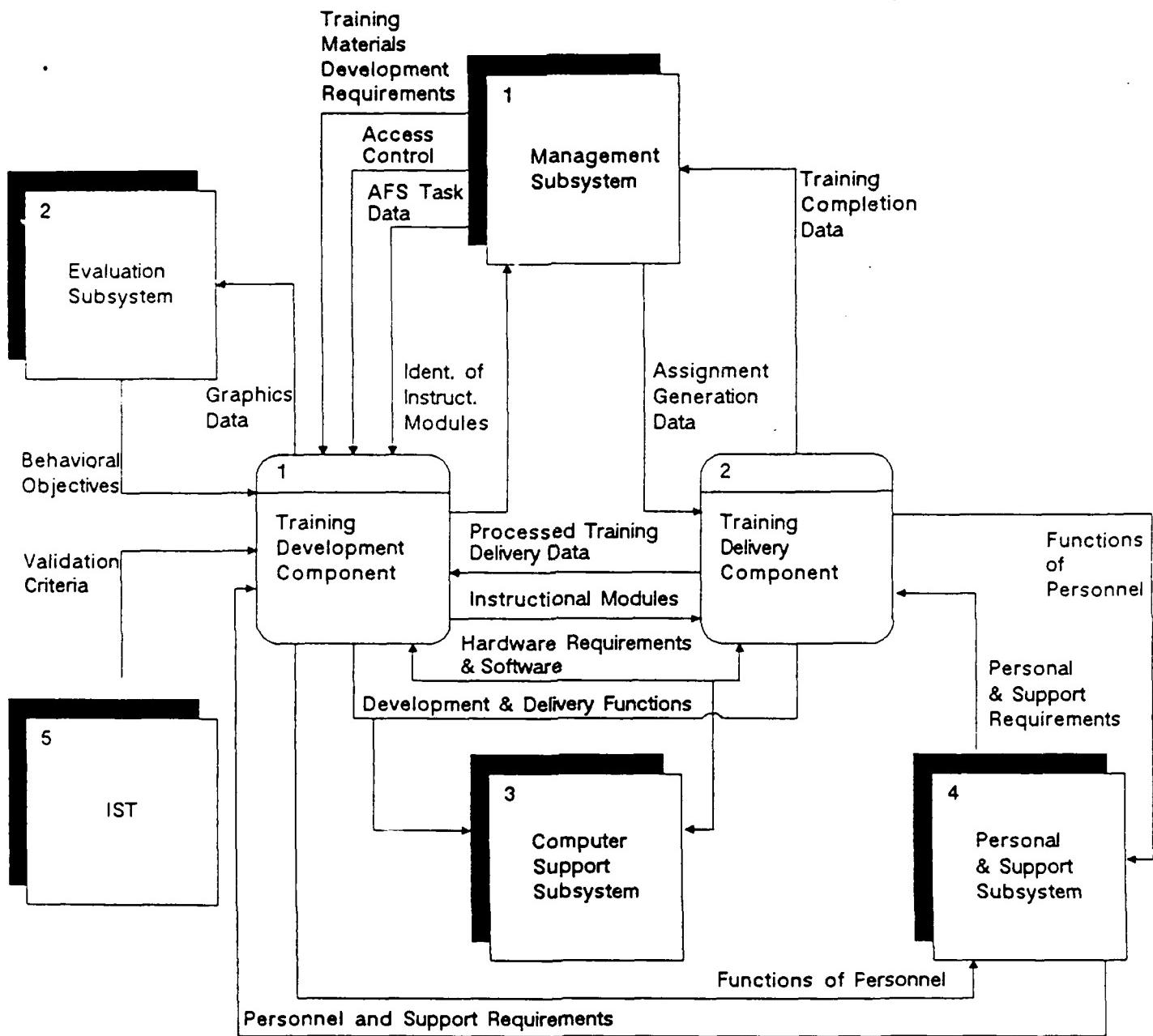
None

b. External Entities Within Training Development and Delivery Subsystem

None

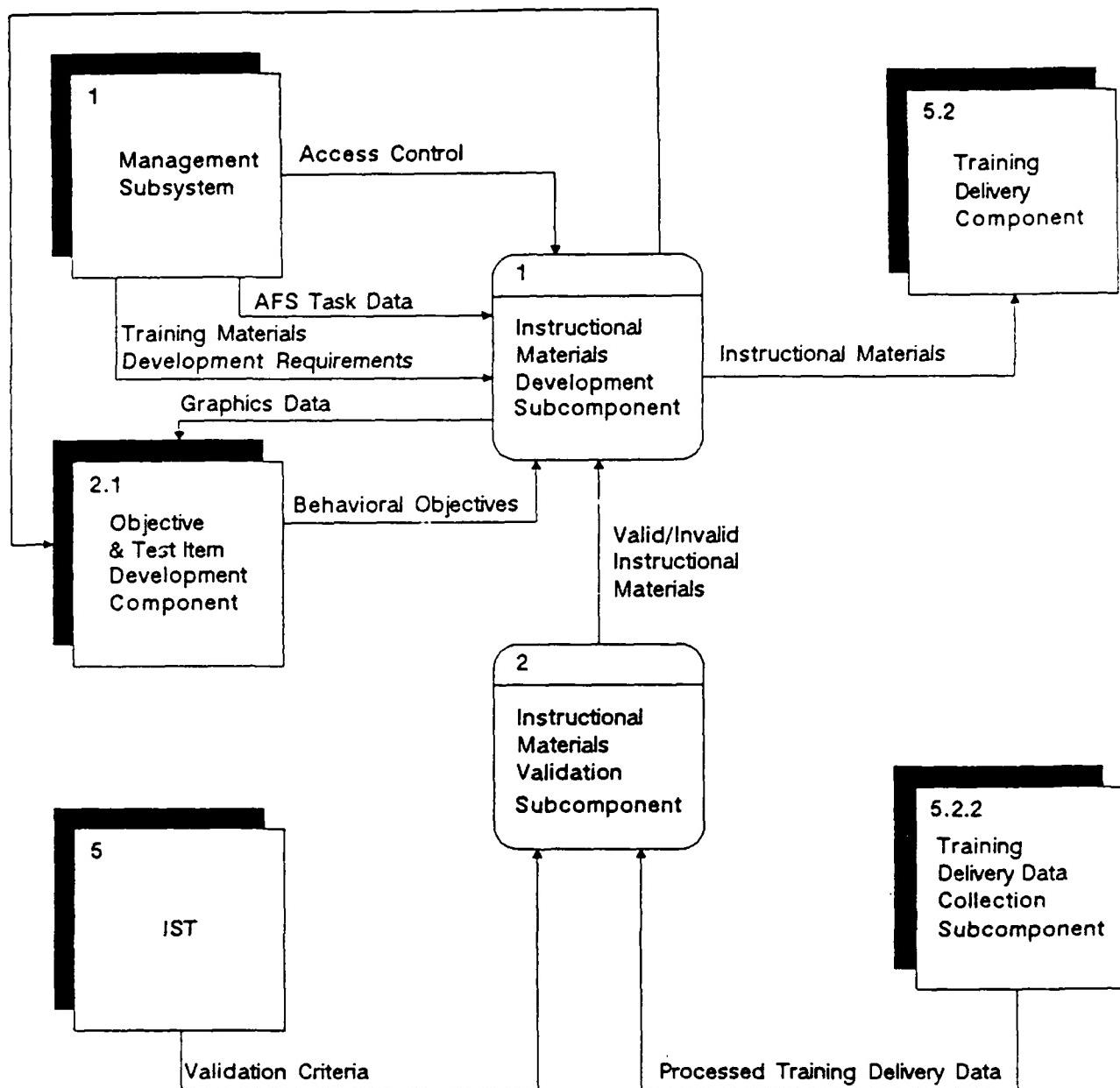
c. External to Training Development and Delivery Subsystem

- 1 Management Subsystem
- 2 Evaluation Subsystem
- 3 Computer Support Subsystem
- 4 Personnel and Support Subsystem
- 5 IST

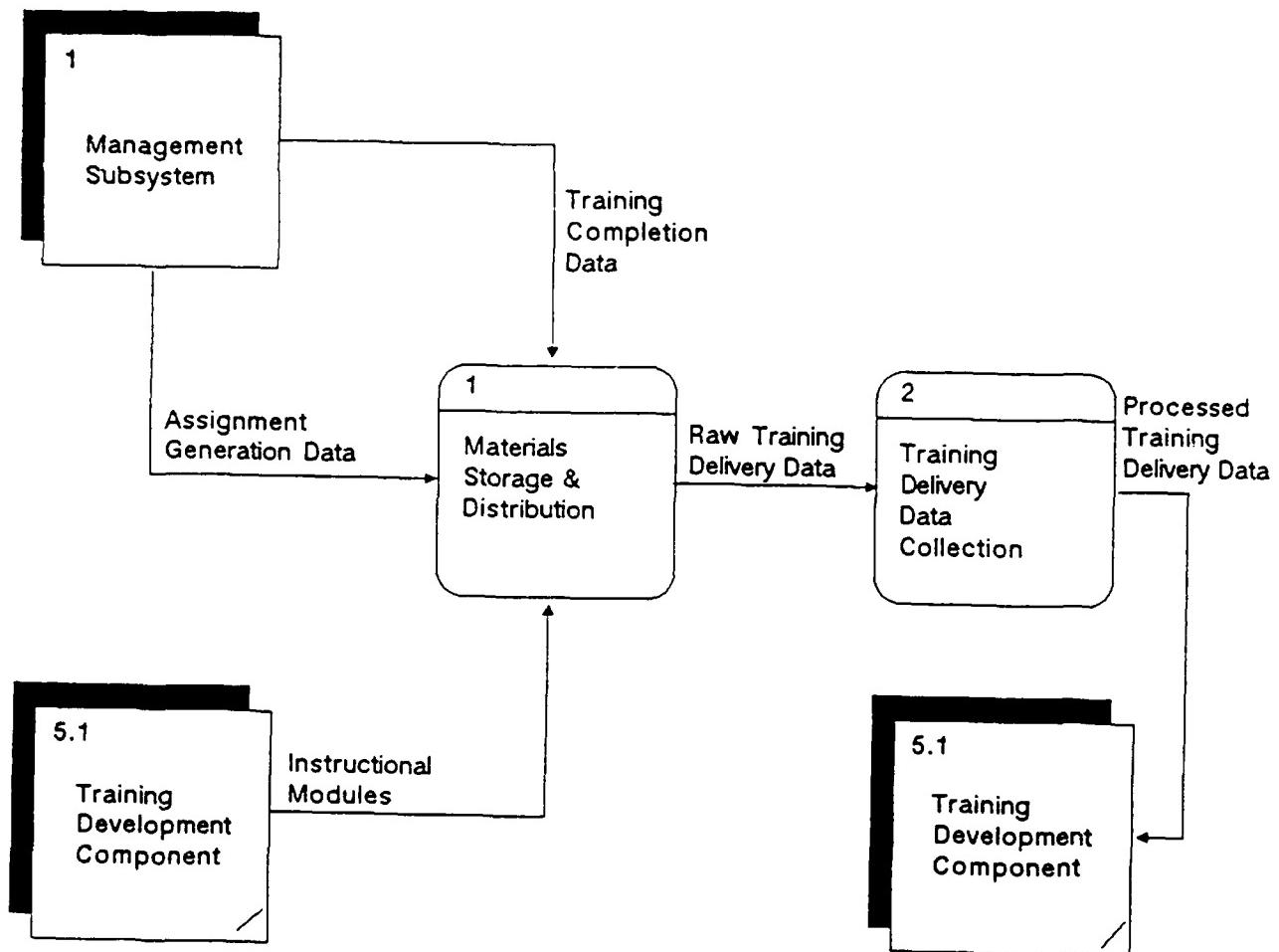


5.0 Training Development and Delivery Subsystem

Identification of Instructional Modules



5.1 Training Development Component



5.2 Training Delivery Component

SECTION 20, APPENDIX II

20.0 DATA DICTIONARIES

20.1 Scope. This appendix contains data dictionaries providing more detailed explanations of the processes, data flows, and data stores. The material is as follows:

- a. Data processes - The highest level processes were described in the text of Section 3.2. The lower level processes, which were broken down in Appendix I, are described here. They are numerically organized and include the process name, description of the process, and its structure.
- b. Data Flows - Contains a description giving depth to the data flow lines on each DFD. They are alphabetically organized. Each data flow explanation contains the data source, data destination, and structure when known.
- c. Data stores - Contains a description of the data contained within the data store. The data store explanation also contains the data sources, data destinations, and the structure.

The Data Dictionary is organized as follows:

20.2 Training Development and Delivery Processes

20.2.1 Training Development and Delivery Data Flows

20.2.2 Training Development and Delivery Data Stores

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

20.2 Training Development Delivery Processes

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.0, Development and Delivery Subsystem

ALIASES: Training Development and Delivery Subsystem

DESCRIPTION: The Development and Delivery Subsystem will produce and maintain instructional materials to support job site training.

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This Process includes subprocesses:
- Process 5.1, Training Development Component
- Process 5.2, Training Delivery Component

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.1, Training Development Component

ALIASES: Development Component

DESCRIPTION: This component produces instructional materials that will support job site training by providing materials that develop and measure knowledge requisite to individual task proficiency and performance certification.

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This Process includes subprocesses:

- Process 5.1.1, Instructional Materials Development
- Process 5.1.2, Instructional and Evaluation Materials Validation

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.2, Training Delivery Component

DESCRIPTION: The Training Delivery Component will store and deliver all instructional materials developed to support job site training and position qualification. Data reflecting individual training status will be generated as a by-product of individual training events. The training status data generated can be used to validate materials, monitor trainee progress, and analyze system effectiveness.

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This Process includes subprocesses:

- Process 5.2.1, Materials Storage Distribution
- Process 5.2.2, Training Delivery Data Collection

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.1.1, Instructional Materials Development

LEVEL OF AUTOMATION: N/A

DESCRIPTION: This process enables the user to develop modular instructional materials that will develop airman task competencies.

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This process includes subprocesses:

- Process 5.1.1.1, Develop Instructional Materials

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.1.2, Instructional Materials Validation

LEVEL OF AUTOMATION: N/A

DESCRIPTION: All training materials developed or revised to support AOTS job site training will be validated in accordance with Air Force ISD policy. All validation logic, plans, and procedures will be designed to emphasize the ultimate validation of materials, branching logic, application criteria, and instruments against a criterion of job performance in an operational setting.

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This process includes subprocesses:

- Process 5.1.2.1, Validate Instructional Materials

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.2.1, Materials Storage & Distribution

LEVEL OF AUTOMATION: N/A

DESCRIPTION: This subcomponent will store and distribute training materials and devices developed to support job site knowledge training. It is within this subcomponent that Assignment Generation Data (assignment "skeleton") is fleshed out by calling in the instructional materials to be delivered to trainees.

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This process includes subprocesses:

- Process 5.2.1.1, Obtain Materials & Match with Assignment
- Process 5.2.1.2, Trainee Uses Materials (actual delivery)

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

PROCESS: 5.2.2, Training Delivery Data Collection Subcomponent

LEVEL OF AUTOMATION: N/A

DESCRIPTION: This subcomponent will collect data relevant to the delivery of job site training. Performance data will be collected on all airman involved in position qualification. This information will be provided on demand to the Training Delivery Component (5.1).

DATA SOURCE: N/A

DATA DESTINATION: N/A

STRUCTURE: This process includes subprocesses:

- Process 5.2.2.1, Extract Decision Point Data
- Process 5.2.2.2, Extract Trainee Comment Data
- Process 5.2.2.3, Extract Response Analysis Data
- Process 5.2.2.4, Format Reports Editor

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

20.2.1 Training Development and Delivery Data Flows

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

Page 1 of 2

DATA FLOW: AFS Task Data

DESCRIPTION: Description of the AFS knowledge requirements. Not a true data flow since information will be printed from AOTS and passed to ISS. However this information will be necessary during the training development process.

DATA SOURCE: DFD 1.1.1, Process 3

DATA DESTINATION: DFD 5.1, Process 2

STRUCTURE: (Units, range, data type, and data frequency as required)
Data elements include (as applicable):

TASK STATEMENTS

Knowledge Requirement - (Ex.: Explain the steps required for checking an aircraft egress system.)

TASK IDENTIFICATION NUMBERS

Codes used to cross-reference tasks to related data.

TASK RELATED DATA

- A. Air Force sources from which tasks were taken
- B. Corresponding statements in specialty training standards
- C. Using functional area (Functional Account Codes)
- D. Using MAJCOMS (Personnel Accounting System Codes)
- E. Using installations (Personnel Accounting System Codes)
- F. Using organizations (Personnel Accounting System Codes)
- G. Using workcenters (Functional Account Code)
- H. Supporting skills and knowledge requirements
- I. Certification-before-performance requirement codes
- J. Recertification requirement codes and frequencies
- K. Common-task requirement codes
- L. Position Task Requirement (PTR) codes

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

• Page 2 of 2

- M. Task factors (% members performing/training emphasis/task difficulty, etc.)
- N. Weapon systems/equipment
- O. Support equipment
- P. Performance/proficiency data sources
- Q. Activities
- R. AFS mandatory task codes (AF, MAJCOM, Installation, Workcenter)
- S. Subtasks

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Assignment Generation Data

DESCRIPTION: Task training assignments for airmen in accordance with task training requirements on their ITRs.

DATA SOURCE: EE 1

DATA DESTINATION: DFD 5.0, Process 2

STRUCTURE: Data elements include

- Skeleton of Instructional Assignment.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Behavioral Objectives

DESCRIPTION: Not a true data flow. A list of objectives (performance requirements, conditions under which a task will be performed) that have been developed to support the training of tasks. These behavioral objectives will be needed during the training development process.

DATA SOURCE: EE 2

DATA DESTINATION: DFD 5.0, Process 1

STRUCTURE: Printed materials (offline)

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Development & Delivery Functions

DESCRIPTION: Not a true data flow. Various operations within 5.0 Training Development & Delivery Subsystem will required software and hardware support.

DATA SOURCE: DFD 5.0

DATA DESTINATION: EE 3

STRUCTURE: N/A

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Functions of Personnel

DESCRIPTION: Not a true data flow. In order for certain functions within 5.0 to be carried out, people and other support will be drawn upon.

DATA SOURCE: DFD 5.0

DATA DESTINATION: EE 4

STRUCTURE: N/A

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Graphics Data

DESCRIPTION:- Graphics created by the Air Force are stored for subsequent print requests or inclusion in instructional modules and tests.

DATA SOURCE: DFD 5.0, Process 1

DATA DESTINATION: EE 2

STRUCTURE: Data elements include
- Graphic identification key
- Symbols

See Final Data Base Design Document for the Instructional Support System, February 88 for data elements information.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Hardware Requirements & Software Programs

DESCRIPTION:- Not a true data flow. Hardware and software support for carrying out automated system functions.

DATA SOURCE: EE 3

DATA DESTINATION: DFD 5.0

STRUCTURE: N/A

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Identification of Materials Developed

DESCRIPTION: A code to identify instructional modules.

DATA SOURCE: DFD 5.1, Process 3

DATA DESTINATION: EE 1

STRUCTURE: Data elements include (as applicable):

- Identification of Instructional Modules

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Instructional Modules

ALIAS: Instructional Materials

DESCRIPTION: Instructional materials that have been developed by the IST
are sent for delivery.

DATA SOURCE: DFD 5.0, Process 1

DATA DESTINATION: DFD 5.0, Process 2

STRUCTURE: Data elements:
- Instructional materials

See Final Data Base Design Document for the Instructional Support System,
February 88 for data elements information.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Personnel & Support Requirements

DESCRIPTION: Not a true data flow. In order for 5.0 Training Development & Delivery Subsystem to work, people will have to carry out certain functions.

DATA SOURCE: EE 4

DATA DESTINATION: DFD 5.0

STRUCTURE: N/A

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Processed Training Delivery Data

DESCRIPTION: Data on training delivery activities required to validate materials, monitor individual progress, and evaluate system effectiveness.

DATA SOURCE: DFD 5.2, Process 4

DATA DESTINATION: DFD 5.1, Process 4

STRUCTURE: Data elements include (as applicable):

- Decision Point Data
- Student Comment Data
- Response Analysis Data

See Final Data Base Design Document for the Instructional Support System, February 88 for data elements information.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Training Materials Development Requirements

DESCRIPTION: Not a true data flow. See under Structure below

DATA SOURCE: EE 1

DATA DESTINATION: DFD 5.1, Process 3

STRUCTURE: Data elements include (as applicable):

TRAINING REQUIREMENTS: Those tasks which should be trained first based on priorities determined through selection criteria such as frequency of performance, percent members performing, task difficulty, training emphasis, etc.

TRAINING MATERIALS REQUIREMENTS: Those tasks for which training materials should be developed first based on priorities determined through the selection criteria used for determining training priorities and the availability of existing training materials.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Training Completion Data

DESCRIPTION: Notification that instructional materials delivery has been completed for a given assignment.

DATA SOURCE: DFD 5.2, Process 3

DATA DESTINATION: EE 1

STRUCTURE: See Final Data Base Design Document for the Instructional Support System, Feb. 88, for data elements information.

Specification Number 70S647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Valid/Invalid Instructional Materials

DESCRIPTION: Identifies the validity of instructional materials that have undergone DFD 5.1.2, Process 1.

DATA SOURCE: DFD 5.1.2, Process 1

DATA DESTINATION: DFD 5.1.1.1, Process 1 and 2

STRUCTURE: TBD

See Final Data Base Design Document for the Instructional Support System, Feb. 88, for data elements information.

Specification Number 705647200
Code Ident No. 76301
Date 1 April 1988

DATA FLOW: Validation Criteria

DESCRIPTION: The criteria for successful instruction are generated by the Air Force and will be based on the ISD process and other USAF guidelines.

DATA SOURCE: The Air Force IST

DATA DESTINATION: DFD 5.0, Process 2

STRUCTURE: N/A